Organisation | QS-18D |
Delivery Methodology |
Outline Project Execution Plan

4.   Your outline project execution plan shall provide, as a minimum, the content that is required for the Project Execution Plan as stated within section S 2910 (Project Execution) of Volume 2 Part 1 (General Requirements) of the Draft Contract.

1. Introduction

1.1 Purpose of the Document

The purpose of this document is to outline the proposed **Project Execution Plan (PEP)** for the successful delivery of the A303 Amesbury to Berwick Down (Stonehenge) project, hereafter referred to as '**The A303 Scheme'.**

1.2 Project Overview

The *Client's* objective is to provide a high quality, two-lane dual carriageway on the A303 truck road between Amesbury and Berwick Down in Wiltshire, with the aim of reducing traffic problems, protecting and enhancing the WHS. The work comprises the following key components:

- A northern bypass of Winterbourne Stoke with a viaduct over the River Till valley
- A new junction between the A303 and A360 to the west of and outside the WHS, replacing the existing Longbarrow roundabout
- A twin-bore tunnel approximately 2 miles (3.3km) long through the WHS
- A new junction between the A303 and the A345 at the existing Countess junction.

1.3 Project Objectives

The work forms part of a programme of improvements for upgrading the A303/A358 corridor. The objectives of the project are to:

- Create a high-quality, reliable route between the South East and the South West that meets the future needs of traffic
- Enable growth in jobs and housing by providing a free flowing, reliable connection between the South East and South West
- Help conserve and enhance the World Heritage Site (WHS) and to make it easier to reach and explore

- Improve biodiversity and provide a positive legacy for nearby communities.

The agreed **Client Brief** forms **Appendix 1** of our PEP.

1.4 PEP Compliance

As per clause **S2910.1** BADGER provides a PEP within 12 weeks of the starting date for acceptance by the *Project Manager*. The PEP includes as an annex the Integrated Project Controls as defined in **section 2.1 V2 8 Integrated Project Controls (IPC).** As per clause **S2910.3** and **S2910.4** as the *Contractor,* BADGER submits our PEP to the *Project Manager* for acceptance. Once the PEP is accepted, we:

- Comply with the PEP
- Keep the PEP under review to ensure it is effective.

As per clause **S2910.5,** as a minimum, on each anniversary of the *starting date,* we will review and update the PEP. We submit the updated PEP within 3 weeks of the relevant anniversary of the *starting date* to the *Project Manager* for acceptance.

2. Strategy development and deployment

Stage 1: A303 Scope compliance

Our first point for forming our strategy for development and deployment will be to collate the Project objectives, aspirations and priorities which will become the baseline for each of our strategic development plans. This process will ensure we stay true to the Client requirements and Project objectives, whilst being able to clearly demonstrate areas of exceedance and added value, i.e., through our TQs. The table below shows the strategic level scope compliance that forms the baseline of our strategy:

Scope Requirements	BADGER Compliance Process Documents
Scheme Objectives: ■ Transport	■ CEMP ■ Community Relations Plan

• Economic Growth • Cultural History • Environment and Community **S105 Project Objectives**	• Stakeholder Engagement Plan • Employment and Skills Plan • EDI Policies • Customer Delivery Plan
• S200 General Constraints on how the Contractor provides the works • S205 General Constraints	• BADGER Project Execution Plan • Scheme-wide Logistics Plan
S800 Management of the works	• Integrated Project Controls Plan (ICIP)
V2P1 S296 Strategic Alignment	• StART3 Assessment
V2P1 S2905 Leadership	• BADGER Leadership Plan (QS-18A)
S1100 Health Safety and Wellbeing	• Health, Safety and Wellbeing implementation Plan (QS-16A)

From examining the scope compliance documents BADGER has determined a strategic vision and mission statement which will be used as our internal lead briefing statement.

Mission and Vision Statement
BADGER will form a collaborative partnership with Highways England to design, develop and implement the A303 Project as an iconic infrastructure asset. Together we will deliver clear improvement for the customer driving experience, an aesthetic elegance which is complimentary to the extraordinary landscape it travels through, and a long-term legacy of community benefit positive impact.

Stage 2: Identifying and selecting the best JV systems to adopt

One of our first key decisions when forming the BADGER JV was to select the key governance, oversight and strategy documents that would be applicable throughout the entire project delivery.

These key documents / systems include, but are not limited to, for example: IMS, H&S Management, Supply Chain Procurement, HR and Payroll.

Our process for selecting the above was to evaluate the founding BADGER JV members policies to assess which is the most relevant and adoptable by the other members. Criteria included:
- Best fit to the A303 scope requirements and digital construction requirements
- Completely aligned to a digital first approach
- Experience of multi-disciplinary project management success
- Lean processes to remove layers of duplication and overlap
- Ability to incorporate specialist processes, i.e., tunnelling
- Assessment of departmental capacity (i.e., is HR team able to deliver their back office services?)
- Ability to apply access levels and shared access with client and supply chain.

Stage 3: Development of A303 priority plans

This mission and vision statement is the corner stone of our onboarding, immersion and communication strategy to keep the Project objectives at the very forefront of everything we do. Key outputs of this approach will be the development and deployment of the following priority management plans:

BADGER Priority Plans - Development Criteria
Leadership Plan Applies a **whole life cost** (WLC) approach by focusing on selecting the **right quality, skills and experience of personnel**, ignoring the commercial advantages by adhering to the scope baseline. This approach will protect and ensure the successful delivery of the A303 strategic objectives and project benefits .
Behavioural Maturity Plan A **long-term journey of cultural change**, though training, personnel development and investment across the lifespan of the scheme. This approach will capture the best of positive behavioural

change which as is visible in the quality of scheme delivery as it has proven in health, safety and wellbeing cultural changes.

Supply Chain Engagement Plan
To identify, select and embed a supply chain, led by key design and delivery partners who will **fully commit to embrace the scheme objectives and requirements** and engage in a significant investment programme to benefit the Project skills base.

Health, Safety & Wellbeing Implementation Plan
A clear and communicated approach of governance within all design   and delivery processes, which ensures a constant focus on embedding a working environment where everyone goes home healthy and unharmed each day. Our plan will create and continuously develop a HS&W culture driven by leadership, delivered through teamwork and confirmed through assurance.

Digital Construction Requirements
A long-term programme across the life of the scheme where a digital first approach can be applied in full. Taking the A303 to an international best practice level of experience and deliverability of digital construction application which will influence how future UK infrastructure programmes are approached.

Asset Management Strategy
A **'whole life' strategy** for asset management which focuses on a safety-first priority in design and deliverability of the maintenance regime and captures future proofing safeguards

Community Relations Plan
A natural extension of the Clients Stakeholder Engagement and Communication Strategy (SECS), **removing barriers between the community and the Project delivery team** through a clear and visible local presence that ensures local communities are kept fully informed throughout all stages of the scheme.

Stakeholder Engagement Plan
To engage **feedback and inclusion** in each stage of the scheme, manage expectations through a visible collaborative approach and programme of engagement activities.

Stage 4: Deployment

Deployment of our strategic plans is based on the chronological order of the Project progress for example, the first point of communication to the core Project team and internal/ external stakeholders will be during the mobilisation phase. These deployment stages are listed in the table below:

Project Stage	BADGER Strategy Deployment Process
Mobilisation	- Complete IPCP (Integrated Project Control Plan) with full documents control and access levels agreed and completed, (refer to QS14C) including the **BADGER Information Portal (BIP) App**. **Implementation and communication** of selected JV partner system i.e., supply chain selection process, HSW Management system **Establish physical working environment** and communication channels via our internal **Communication Plan** – to ensure everyone can commence working as one team - Pre-qualification selection of the supply chain and long-lead items (e.g., STP, TBM) - Establish full employee database to capture areas such as **flexible working hours /carer responsibilities** which need to be fed into resource planning - Onboarding for core workforce - Immersion programme for key personnel - Achieve Client sign off of all BADGER strategy development priority plans and **success measurement criteria** **Engagement** with Highways England and Stakeholders to share our proposed meeting structure
Construction Phase - Design	Repeat the above processes for all new starters joining the scheme.

Construction Phase - Delivery	Repeat the above processes for all new starters joining the scheme.
Completion/ Handover Phase	Repeat the above processes for the Asset Management Team who are taking over the maintenance regime

3. Decision-making and governance structure

3.1 Governance structure

JV Structure

Please see **QS18A** section 1 for details on JV structure and governance.

Board of Directors

BADGER's governance structure will be led by our Board of Directors, who review the status of the A303 Scheme and review recommendations for commitments. The Board of Directors are represented by each of the three BADGER JV partners.

3.2 Decision making

Below, we detail our processes for effective and efficient decision making and our governance structure on the A303. Further details regarding our specific decision-making behaviours and how BADGER will implement them are contained within **QS-18B**.

Stage 1: A303 Scope compliance

The following key references will be used to inform our decision-making process and governance structure:

Scope Requirements	BADGER Compliance Process Documents
Annex E, Section 3 Decision making	▪ Hierarchal Organisation Charts ▪ RACI Matrix

	▪ Delegated Authority Schedule ▪ Quality Management
V2P1 S296 Strategic Alignment	▪ StART3 Assessment
V2P1 S2905 Leadership	▪ BADGER Leadership Strategy
Scheme Specific Performance Measures (SSPM) 3.2 Leadership Capabilities & Collaboration Performance Framework (CPF)	▪ Behavioural Profiling Assessment ▪ Personal Profiling ▪ BADGER Performance Management Systems
V2P5 Digital Construction Requirements	▪ BADGER Digital Strategy
Volume 2, Part 8 Integrated Project Controls	Our integrated Project Controls Plan (ICIP) will cover the requirements of clause 2.1.4

Stage 2: Identify appropriate decision maker (Governance Structure)

Our Delegated Authority Schedule (DAS)and Project Controls Plan led by the **BADGER Project Controls Manager**, will assign key responsibilities to the Leadership Team and immediate reports. It will confirm powers and limits of authority at Project level, including when Board Members require consultation prior to decision making e.g., cost impact. The DAS will be implemented to the lowest practical level at site and project level in full alignment and compliance to all safety standards and skills competency requirements.

Decisions will be affected by confirming the compliance processes for design and construction, i.e., signing of method statements and risk assessments, and the impact of all changes to programme, budget, required resources and any element effecting the **SSPMs and PPMs,** using the RACI Matrix to confirm the right people are involved and consulted, including **key stakeholders** and Highways England.

Each decision will be allocated an 'owner', ensuring employees take responsibility for their own work, avoiding any duplication or overlap of roles and responsibilities and making accountability transparent.

Stage 3: Governance structure to analyse impact of decisions

To analyse the impact of decisions and come to informed decisions, our team will utilise the following to assess all necessary facts and information to take appropriate action:

- Our Common Data Environment (CDE), Business Collaborator. Our CDE will act as a single source of truth, storing up to date documentation. It will be used by the whole Project team to analyse information, improving efficiency
- Monthly change request meetings to review proposed changes via Early Warnings and Compensation Events. This forum will test any proposed changes and all associated service and cost/savings implications providing a clear audit trail.

Scenarios for assessing the impact of change
The following tools will used to support decision making by analysing impact of change:

- BIM – Design constructability 3D and 4D simulations to test constructability and aesthetic impact
- Option appraisal analysis using whole life cost appraisals to select materials and components
- P6 Primavera to assess impact to programme
- Impact on Project Objectives and Benefits
- Impact on SSPMs and PPMs- Collaborative performance Framework record any impact by the decision making and reported via the progress reporting cycle.
- Acumen Fuse: to test the A303 Programme – this is a metric analysis and visualisation tool that assesses quality of schedules, accuracy of cost forecasts, realism of risk models, earned value and project performance. It will be led by the Project Director, managed by the Senior Planner and supported by the Leadership Team, major work package/specialist supply chain. **(TQ5C4.3)**

BADGER's Microsoft Azure platform will hold simultaneous analysis of all factors contributing to workforce decision making and reporting (see **QS-14C** for further information).

Stage 4: Ensure compliance with NEC4 contract

Any change that impacts programme, quality or cost will be raised as an Early Warning to the *Project Manager* and recorded on the Early Warning Register. Following an Early Warning meeting where the proposed change is discussed, the *Project Manager* may instruct BADGER to develop a Compensation Event to be assessed and approved in accordance with **Section 6 of NEC4.**

All changes/decisions, where necessary, will be submitted to the *Project Manager* in accordance with the timescales in **Contract Data Part One**. Review of any impact or conflict with the A303 Z clauses will need to be assessed by the Commercial Manager.

Stage 5: Decision acceptance

All decision-making acceptance will be aligned to the BADGER RACI matrix and Delegated Authority Schedule.

Stage 6: Update of governance and compliance documentation

Where decision making has impacted a change to the existing governance structure, or **Project benefits**, these changes will be updated in the appropriate process document i.e., RACI Matrix, programme, cost plan. The documents will be renamed in accordance with version control protocols to alert all personnel that a revised version is now updated within Business Collaborator.

Stage 7: Communication of decision

Our Common Data Environment (CDE), Business Collaborator will send out e-mail alerts signposting version control changes to key and core documents.

Discipline Managers will ensure Risk Assessments and Method Statements are updated accordingly to reflect any changes made.

Further communication will be assessed and updated by the following communication channels, to be used as appropriate:

- Common Data Environment (CDE) as the 'single source of truth'
- BADGER Information Portal App (BIP)
- Health and Safety Alerts
- Information release schedule (IRS)
- Key Meetings (V2P8)
- Site engagement tours
- A303 Knowledge Hub
- Monthly Progress Meetings
- Toolbox Talks
- Weekly Site Meetings
- A303 BIP App
- Training

4. Escalation and conflict resolution

BADGER will operate a clear process for the escalation and conflict resolution of both internal and external issues, grievances and complaints.

Stage 1: A303 Scope compliance (internal and external)	
Scope Requirements	**BADGER Compliance Process Documents**
S251 Customer S252 Customer Focus S253 People Strategy Annex K Key People	▪ BADGER Organigram ▪ BADGER RACI Matrix ▪ QS-17A Stakeholder Relations Plan ▪ QS-17B Community Relations Plan ▪ QS-18A Leadership Plan
A303 Customer Plan	▪ BADGER Customer Delivery Plan
A303 Stakeholder Engagement and Communications Plan	▪ BADGER Stakeholder Engagement and Communications Plan
S850 Meetings	▪ BADGER RACI Matrix ▪ BADGER Job Profiles

Project Controls 2.4 Change and Baseline Management	▪ Integrated Project Controls Plan (ICPC)

Internal escalation and conflict resolution

The stages below detail our approach and process for the escalation and conflict resolution of internal issues, grievances and complaints made to BADGER.

Our approach to conflict resolution will be aligned to **NEC4 W1- W3** terms, including issue of Early Warning Notifications, identification of risk priority, accountable owner, timescales, improvement plans, and lessons learned.

All staff members who deal with complaints should focus on our Behaviour Maturity Plan **(QS-18B.)** This demonstrates our alignment to the IBIP and details our processes and procedures that will directly influence how conflict is resolved.

Stage 2: Acknowledging receipt of complaints

All complaints, internal and external, will be acknowledged in writing i.e., email and/or letter within 24 hours. Ownership will either be a member of the Leadership Team for internal issues or the BADGER Complaints Team for external. This includes contact details for the relevant department and details of the BADGER escalation procedure.

Stage 3: Identify level of risk / priority

Grievances or concerns will be analysed and categorised as defined by the risk assessment level as detailed below:

- Category 1 – Significant impact to Project or business operations and or reputation
- Category 2 – High impact to the Project or business operations and or reputation
- Category 3 – Medium impact to the Project or business operations and or reputation

- Category 4 – Low impact to the Project or business operations and or reputation but may result in inefficiency
- Category 5 – No impact to the Project or business operations and or reputation but still needs to be addressed.

Stage 4: Assigning ownership

Once the complaint, grievance or concern has been prioritised, an accountable owner will be assigned, based on the content, extent of impact / risk the issue presents to the Project. This will include:

- **Project Director** - The Project Director is ultimately accountable for swift resolution of grievances or concerns, categorised as having a 'Significant' or 'High' impact, whether they be external or internal issues. They will provide hands on, proactive support, with the authority to commit additional resources to resolve issues and maintain positive client, stakeholder and workforce relationships
- **Leadership Team** – The Leadership Team are responsible for resolution of grievances or concerns which represent risk of 'Medium', 'Low' or 'No' impact, as well as providing support to the Project Director in resolving issues which prevent 'High' or 'Significant' impact. Assignment to a leadership team member is directed by the Project Director based on subject / content matter.
- **Additional supporting roles** – The most appropriate individual(s) will be assigned ownership to support resolution of grievances / concerns, e.g., HR Manager, Stakeholder Manager, Community Relations Manager.

Stage 5: Response times for resolution

All grievances and concerns will be recorded in a dedicated tracker database, with set timeframes for issue resolution, illustrated through a Red, Amber, Green status allocation. This includes resolution within:

- Four hours for issues with 'Significant' impact where it is deemed business critical i.e., works have stopped
- Eight hours for issues with 'High' impact

- Twenty-Four hours for issues with 'Medium' impact
- Seven working days for issues with 'Low' impact
- Seven working days for issues with 'No' impact

The Project Director will be responsible for monitoring final close out and resolution.

Stage 6: Escalation Process

Significant or high impact internal and external issues, which have not been resolved in accordance with the timescales set out in stage five, will be elevated to the BADGER Board for further direction and /or Highways England for their advice and consultation.

BADGER aim to prevent and resolve conflicts before they escalate into full-fledged disputes. This will include establishing communication channels for partnership and collaboration, implementing risk workshops to raise awareness of potential issues and conducting monthly schedule reviews that prioritise issues potentially affecting the critical path. Our approach will include resolving conflicts at the lowest appropriate level of management and escalating if necessary.

We will devise alternative solutions to issues and provide ad hoc training on conflict resolution. When preventive measures and escalation are not successful, we will follow the process defined in Schedule 27. A similar strategy will be employed for internal disputes where Level 1 will comprise only Board of Representatives and the Steering Committee.

Stage 7: Embedment of continual improvement and lessons learned

The assigned owner will be responsible for developing an Improvement Action Plan, to be signed off by the Project Director. The Project Director will responsible for ensuring learning from the issue / concern is embedded into future training programmes, lessons learned reviews and communication via Toolbox Talks and e-bulletins. Customer complaints will be discussed in meetings in accordance with **S850 Meetings.**

4.2 External escalation and conflict resolution

For details of our public complaints procedures, please direct all queries to the **Project Contact Centre** as detailed in our **Community Relations Plan (QS-17B)** and will be detailed in BADGER'S Customer Delivery Plan**.** Our processes for dealing with external complaints will follow the same stages as those detailed above for dealing with internal issues.

Highways England will be informed immediately of all external complaints or issues and any internal grievances or concerns which are categorised as having a high or significant impact to Project, business or reputational operations. Please see Stage 3 for Category levels.

The Project Director will be responsible for monitoring final close out and resolution.

5. Clarity of roles and responsibilities

In order to provide full clarity of roles and responsibilities BADGER will undertake the following staged processes:

Stage 1: Review of the scope

Scope Requirements	BADGER Compliance Process Documents
Annex K Key People	▪ BADGER Organisation Chart ▪ QS-18A Leadership Plan ▪ BADGER RACI Matrix ▪ BADGER Role Profiles
S800 Management of the works	▪ BADGER PEP ▪ Delegated Authority Schedule ▪ QS18A-C
S253 People Strategy	▪ BADGER Inclusion Action Plan

Stage 2: BADGER Roles and Responsibilities governance documents

The following BADGER documents detail our key people, reporting lines and responsibilities:

Organisational Chart

BADGER's organisation structure will reflect the key roles in accordance with **Annex K, Key People, S800 / S805** Management of the works/ Project Team. In addition to the above, our organisational chart also includes other key functions such as Human Resources Department, Project Administration and Financial control. (**Appendix 2** – Organisation Charts – BADGER's organisational chart also details all reporting lines and authority levels.

RACI Matrix

The BADGER **RACI Matrix** will confirm the **key roles and interfaces** between the entire integrated delivery team and their responsibility assignment to crucial tasks, milestones and key decisions.
Our RACI Matrix forms **Appendix 3** of our PEP.

Role Profiles

To assist with clarifying the responsibility of each **Annex K Key People** and our senior and middle management personnel (as per BADGER'S Organisational Chart) we will develop role profiles to defines the role and responsibility throughout the Project stages from notice to proceed through to handover into operating maintenance. (**Appendix 4** role profile structure).

Stage 3: Communication of BADGER Roles and Responsibilities to the whole team

To ensure that all staff are aware of all BADGER key roles and responsibilities throughout project delivery, we will utilise the following:

- **A303 BADGER Information Portal (BIP) App.** This app will be available to all staff and hold the above roles and responsibility governance documents. A push notification will be sent to all staff with any changes to the roles and responsibilities structure.
- **Onboarding Process** - All roles and responsibilities will be detailed during staff onboarding with refresher courses throughout scheme delivery
- **Project Directory** – detailing all staff and supply chain members contact details. This will sit within the A303 BIP App and it is the duty of BADGER'S Human Resources Manager to keep this UpToDate.
- **Email updates** - If at any point during the project a member of the **Annex K Key People** leaves the scheme, we will alert all staff immediately.

5.1 Sucession planning

Our processes for succession planning, including identification of critical roles and skills, succession profiles, nominating successors and development to enhance skilled resources, are detailed in **QS18A section 1.1.3**. We will have in place a shadow organisation chart with named people from within the BADGER existing team who possess the relevant skills, and experience.

6. Developing a physical environment that will support project delivery

Stage 1: A303 Scope compliance

Scope Requirements	BADGER Compliance Process Documents
- V2P1 S253 People Strategy - V2P1 S253 Annex G Inclusion action plan	- BADGER Organisation Chart - QS-18A Leadership Plan - BADGER Inclusion Action Plan - BADGER RACI Matrix - BADGER Role Profiles

- V2P1 S1100 HS&W - V2P1 S1106 HS&W culture - Health and Safety Executive Guidance	- HS&W Implementation Plan - ISO 14001
V2P1 S2915 Supply Chain	- BADGER Supply Chain Engagement Plan - BADGER Inclusion Action Plan
S216 Security Management Plan	BADGER Security Management Plan
Outline Environmental Management Plan	BADGER CEMP

Stage 2: An inclusive environment

In line with requirements of the **Inclusion Action Plan (IAP)** and **S253**, BADGER will work collaboratively with partners, so our workplaces are inclusive environments. Our IAP will outline how our physical working environments will support inclusivity and how we will support workers through our conditions of service, e.g. flexi-hours, or working from home for administration staff where possible.

Stage 3: Site establishment and co-location

To encourage our **'one-team ethos'** BADGER will secure a co-located office between BADGER's JV and DJV in Bristol for the early phase works and development of the Detailed Design. This allows close coordination and easy interface with Highways England.

The design of this co-located office will have efficiency of working and workforce wellbeing at its forefront. It will include group and individual work areas as well as break our areas for small group work.

There will be clear delineation between work and welfare areas as shown on the example below:

Areas for flexible, multi-purpose use

Once co-located, BADGER will maximise the use of an open plan layout with:

- Bright, fresh and sophisticated colours and natural finishes chosen together to create an integrated atmosphere
- Priority working space to support constructive challenge and collaboration
- Break out meeting areas to support privacy and noise control
- Areas for flexible, multi-purpose use, DDA facilities
- Privacy mobile phone usage pods
- COVID working isolation areas
- Good ventilation and effective lighting, recommended by HSE
- High quality welfare facilities.
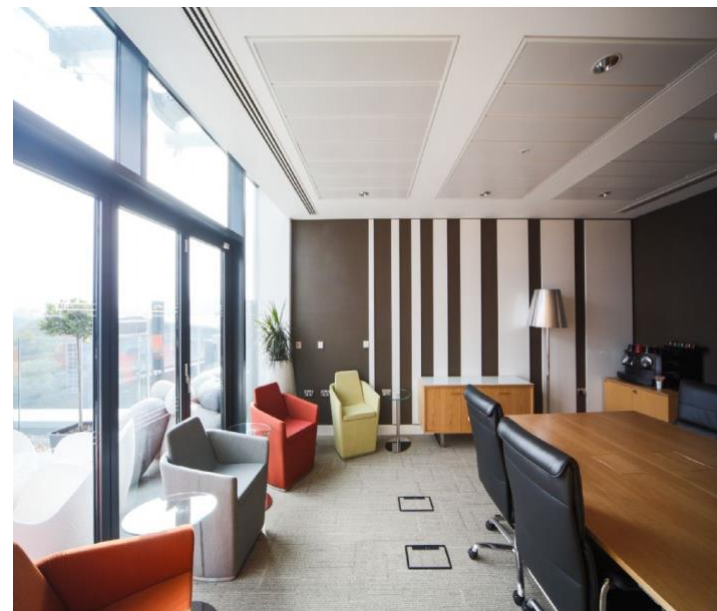
Example private use mobile phone pod

Break out meeting areas to support privacy and noise control

Stage 4: Information sharing systems

We have already seen the benefits of the use of IT for BADGER and *Client* Communication and relationship forming, despite COVID 19 face to face meeting restrictions and can continue to work this way should restrictions still be required. We have planned for segregated spaces for **video conferencing** to be part of our office to allow continuous communication channels.

Our approach to integration of BADGER processes and procedures with the *Client's* own processes and procedures will be included within our **Integrated Project Controls Plan (IPCP)**, our **Information Services Strategy** and our **BIM Execution Plan** developed and submitted within 4 weeks of the starting date (**V2P1 S306.3**). This will include:

- Transparency and accessibility of our systems and data, aligning with the Highways England's **Project Management**

Plan and the **Integrated Project Controls Manual**, including commercial, risk, change, baseline management, HS&W, performance, quality, customer, programme and document management

- Commitment to use the same or equivalent systems to the *Client* specified systems within **V2P8** including CEMAR, Xactium, Airsweb 2, Power BI, Data Hub and (see **QS-14**), with training provided to staff where required. To support the effectiveness of working and communication, upon contract award, we will use our BADGER Portal and BADGER Management System (CEMAR / PRISM) ensuring one system for all team members as per **S841**. This supports full version control.
- Engaging in the *Client's* CIP Information Services Leads workshop at least every six months to support knowledge sharing and coordination of innovations (**V2P5**)
- Engaging in the *Client's* **Project Information Services Steering Group**, attended by our Information Services and Digital Lead each month to provide updates on Information Services activities, strategy, deliverables at stage gates and any issues or risks. (**S910.8** and **V2P5**)
- Use of the Project Information Model (PIM), virtual, immersive and visualisation technologies and a digital design review process in line with **ISO19650-2** to quality assure design output
- Provision of an information portal for the *Client* to view the PIM, as well as integration of processes and procedures within the Employer Common Data Environment, Business Collaborator (**V2P5**) as the single source of truth. Please refer to QS14B.
- Compliance with Information Security and the *Client's* Data Handling Requirements, including provision of an Information Security Management System certified to **ISO27001** within six months of the Contract Date and an Information Security Management Plan within 12 weeks of the starting date. (**V2P9**)

Stage 6: Health, safety and wellbeing considerations for sites/offices

All of our sites will be planned and established with the health, safety and wellbeing of the workforce and that of local road users being the top design priorities. The following considerations will be made:

Facility/ action	Benefit
Site canteen	▪ Opportunity to influence health eating ▪ Preparation of culturally appropriate food ▪ Opportunity to employ local students for catering and hospitality ▪ Demonstrate our value of the workforce, supporting high levels of morale
Private areas of communication with family	▪ Privacy for the workforce to communicate with home in a designated private area via video link ▪ Demonstrate our value of the workforce, supporting high levels of morale
Culturally appropriate areas (e.g. prayer room, meditation area)	▪ Support the develop of genuine inclusivity
Self-testing health kiosk	▪ Encourage personal responsibility for health ▪ Allow for immediate sign posting to intervention should an issue come to light on site
PPE washing and drying room	▪ Ensure PPE clothing is cleaned after every usage and ready for the next day of working
Wheel washing facilities	▪ Limit the dust and mud leaving the confines of the site
Logistic plans for deliveries	▪ Deliveries will be planned to cause minimum disruption to local road users/ local residents in terms of quantity, noise and dust.

Site Security Systems	▪ To ensure no access to unauthorised personnel ▪ Safe storage of any hazardous materials
Mental health first aiders on each site	▪ Help in site in case of need at all time
HS&W site monitoring programme	▪ As well as site- supervisors our HS&W manager will conduct weekly monitoring visits. All outcomes from all HS&W activities are shared via our A303 BIP App
Wellbeing campaigns run throughout project delivery as part of a wellbeing calendar (further details in QS-16a)	▪ Wellbeing is not viewed as a 'bolt-on' but rather fully integrated into the works calendar from the start of the scheme for the benefit of the whole workforce.

Project Workforce accommodation

BADGER'S PEP will detail our workforce accommodation strategy and all relevant links with local stakeholders that this will necessitate. This will include:
▪ Local landlords/ holiday homeowner accommodation with preferential rates agreed by BADGER
▪ Local landowners
▪ Wiltshire Council

Please refer to **QS-13A** for the full site establishment plan detailing all BADGER working facilities on site.

Stage 6A: Covid 19

Where COVID 19 presents co-location issues, BADGER's communications and information sharing systems will be used to ensure effective communication and leadership at all levels, for all

team members. To support the effectiveness of working and communication, upon contract award, we will use our BADGER Portal and BADGER Management System (CEMAR / PRISM) ensuring one system for all team members as per **S841**. This supports full version control.

We will continually assess the pandemic situation throughout project delivery with the following used to minimise infection risk:

- Lateral flow testing, temperature detection
- Social distancing including staggered shifts
- Virtual Reality where possible
- IT to facilitate home working
- Sanitising stations / information stations all DDA compliant
- Compliance with Construction Leadership COVID-19 Site Operating Procedure.

Stage 5: Staff induction to site and head offices, Information systems

Floor plans and site layouts will be available on the A303 BIP App. Training in the functionality of this App will form part of every member of the workforce's induction programme. Where feasible, site tours will also form part of induction processes as will all health and safety procedures. These will also be re-visited on a regular basis as part of daily briefings or toolbox talks.

BADGER information systems: workforce induction will also include relevant descriptions and usages of BADGER information systems, specific to the user. This will explain access levels and the functionality of each tool. This information will also be readily at hand for any reminders of the A303 BIP App.

Welcome Pack: Each member of the workforce will receive a relevant welcome pack. This will be bespoke for the type/ location of the worker. It will include information on the following:

- Expected behaviours in the local community
- Local leisure facilities BADGER staff are able to use
- Wi-Fi passwords where relevant
- Calendar of key events and programme schedules

- Pen portraits of key senior leaders
- Contact details for BADGER support services

Stage 7: Review and monitoring of the physical environment

Our measures described in Stage 4 will form part of our monitoring processes of the physical environment and the impact on Project Delivery. Reports from all monitoring activities will form part of the monthly project review report and subsequent meeting to support strategic and specific site/ office working arrangements and decisions. Any decisions emanating from these reports will feedback to the workforce via the A303 BIP App.

Examples of best practice will be shared via our HS&W Best Practice Hub and the A303 BIP App as will be any awards/ recognition of good practice in this field.

Any complaints received from members of the public will be dealt with via our complaints procedures. If unresolved, our escalation processes as detailed on under section 4.0 – Escalation **and conflict resolution** will be instigated.

7. Performance management

Stage 1: A303 Scope compliance

BADGER's **Performance Management Strategy** will be driven by our Performance Management procedures which fully comply with all aspects of the following:

Scope Requirements	BADGER Compliance Process Documents
The A303 Performance Manual- with reference to the SSPMs	- BADGER Performance Management (PM) processes
The A303 Collaborative Performance Framework (CPF)	- BADGER PM processes - BADGER Project Collaboration Charter

S600 Quality Management	▪ BADGER Quality Plan (link to PM quality standards
S665 Performance Management Points	▪ BADGER PM processes ▪ BADGER Project Collaboration Charter
S670 Performance Measurement	▪ BADGER PM processes/ timescales ▪ BADGER Project Collaboration Charter
S675 Continual Performance/ LEAN including Annex E	▪ BADGER PM target setting processes
IPC 2.6 Project Management.	▪ BADGER PM processes/ timescales

In addition, given the priority BADGER is making of Health, Safety and Wellbeing, our Performance Management Strategy demonstrates compliance with:

▪ Highways England Health and Safety Five Year Plan
▪ Highways England Home Safe and Well Strategy

Stage 2: Establish baseline performance requirements

Our Performance Management Strategy will focus on how we can exceed any statutory minimum performance to deliver significantly better results. We will use this throughout our team to measure the performance of:

▪ The whole BADGER team
▪ Progress of different aspects of the A303 scheme
▪ Specific different team performances
▪ Leadership performance
▪ Individual team member performance
▪ Supply chain performance.

The table below details BADGER's enablers and measurement criteria in order to meet our expectation to exceed the SSPMs of:

▪ SSPM 1: Safety
▪ SSPM 2: Customer Service

▪ SSPM 3: Deliver the Road Investment Strategy (RIS)
▪ SSPM 4: Maintenance, Safety, Customer Service, Delivering the RIS

SSPM	Enablers	Measurement
SSPM 1 – Safety	▪ BADGER Leadership Strategy ▪ Design for Safety ▪ HSW Plan ▪ Wellbeing strategy ▪ Traffic Management Plan	▪ Workforce Consultation ▪ Customer Surveys, motorised, NMUs, local communities ▪ RIDDOR figures ▪ AFR figures ▪ Absenteeism figures ▪ Mood surveys
SSPM 2 – Customer Service	▪ Stakeholder Engagement Plan ▪ Traffic Management Plan ▪ Logistics Strategy ▪ Communication Strategy ▪ Customer Delivery Plan	▪ Customer Surveys, motorised, NMUs, local communities ▪ Stakeholder reports ▪ Traffic time delays statistics ▪ Post Completion Evaluation ▪ End user satisfaction surveys ▪ WHS visitor experience surveys ▪ Social media feedback
SSPM 3 – Deliver the RIS	▪ Employment & Skills Plan (ESP) ▪ A303 Social Value Charter	▪ Highways England satisfaction surveys ▪ Progress towards ESP targets

	▪ EDI recruitment strategy ▪ Retention strategy ▪ CPF measures 2.1a- b, 3.2a, 4.2a, 5.1a-c, 6.2	▪ £spent on training – LM3 calculators ▪ Progress towards EDI targets ▪ Retention figures
SSPM 4 – Maintenance, Safety, Customer Service, Delivering the RIS	▪ Detailed maintenance and running costs benchmark report ▪ HSW maintenance period plan	▪ AFR figures ▪ Highways England satisfaction surveys ▪ Social Media feedback ▪ End user satisfaction surveys

Stage 3: Establish monitoring /review processes for personnel

BADGER's performance management approach will be aligned to all aspects of the **A303 Performance Manual** and the **Collaborative Performance Framework (CPF)** and will be managed by the **BADGER Performance Manager.** Performance management targets will include any training needs that may be required to support the target being reached. At least 3 of the targets will be founded on the following:

▪ How the target contributes to the successful delivery of the scheme
▪ How the target supports business growth
▪ How the target supports individual development

Those with individual performance management targets, and those responsible for team performance, will be allocated one person to conduct any monitoring and reviews. This person will collate information from other people and sources to provide supporting evidence on progress towards targets. (See measurement table above.)

Reviews will be conducted annually with a 6-month additional review if deemed necessary. Time will be allocated for meaningful face to face reviews and reviewers will be provided with training/ a toolbox kit on how to make the most of these reviews.

A selection of reviews will be sampled by the senior leadership to ensure consistency of approach and standardisation.

Stage 4: Internal Audit

As part of our performance management strategy, we will conduct:

▪ **Project Reviews** at key stages to ensure continual improvement by informing and developing new approaches, streamlining processes, maximising efficiencies and quality. These reviews will include internal audits in accordance with ISO 9001
▪ **Pre-Scheme Analysis** develops the client brief, analyses the environment and establishes Key Performance Indicators (KPIs) from the outset. This ensures lessons are learned, non-conformances are raised and registered on a central database. This is periodically reviewed to identify trends
▪ **LEAN Workshops** during early engagement with the client team allows our expert teams to familiarise themselves with each delivery aspect, transferable from scheme to scheme. **(**

Details from all of the above activities will be included in BADGER's monthly progress report covering performance management.

Aligning these to the **Performance Management Points (Table 3 in the A303 Performance Manual**) supports our quality and performance control assessment.

Stage 5: Under performance procedure

In the unlikely event of an underperformance, be it by an individual or a subcontractor, a **Performance Improvement Plan** will be implemented. Each plan will be a live document encompassing:

▪ Engagement Plan to understand the nature, cause and scale of the issue

- Regular review of service delivery targets against NEC4 specifics
- Links into our Supply Chain Database to enable cross-comparison of performance, highlighting trends and capturing best practice
- 360° feedback to maximise supplier opportunities, drive efficiency savings and add value.

Support will be provided to help resolve the issue. For an individual this maybe a mentor, additional training or the opportunity to work shadow someone with similar performance targets. For a subcontractor this support may include supplementing labour or purchasing materials on their behalf.

Further poor performance will result in a written warning and if no improvement is forthcoming, termination of contract. **(Clause 24.2 *conditions of contract)*.**

Stage 6: Performance management reporting system

BADGER'S performance management reporting procedures will align to the A303 Performance Manual (**S670**) and **Reporting (S253.21).** We will use automated reports where possible to allow teams to be Lean and management data to be readily available at any time to all relevant project members and will contribute to discussion where we participate in client working/steering groups.

Innovative reporting methods will be employed; for example, the site teams will use our digital site monitoring software to record subcontractor progress, safety, quality and other data directly into a tablet using a pre-defined standard data structure agreed with Highways England. This will lead to potential upskilling of the supply chain by discussing progress and potential improvements.

BADGER will record and measure the benefits realised from the execution of continual improvement process in accordance with the **LEAN Benefits Realisation Guide**, in line with **Annex E**.

This will include:
- Capturing and recording the reductions in cost and related efficiencies and supporting evidence

- Capturing and recording any other benefits
- Ensuring results are recorded showing general details about the improvement, the base line/current state, planned/targeted benefits, and actual/realised benefits with supporting calculations
- Reviewing and reporting on performance on a monthly basis or when required to do so
- Providing the benefits created in the format required by *the Client*
- Preparing case studies and knowledge transfer packs for the captured benefits if requested to do so by *the Client*.

BADGER will also measure our adoption of a continual improvement culture using the **LEAN Maturity Assessment Toolkits** at Organisational and contract level.

Our delivery of continual improvement process will be adjusted to adopt lessons learned from the measurement of our performance.

Stage 7: Inclusion of BADGER survey team input

BADGER will provide our own Topographic surveying management team on site (**Appendix 2** - Organisation Chart). They will provide:
- A topographical survey of the works,
- A visual record of the works and
- A 3D mesh digital model of the working area with full colour data surface imagery.

This will ensure the accuracy of the survey data, our own control of the GIS, the maintenance of the Project Surveying grid, the coordination of the surveying resources and the correctly timely application of the data received from the designers and BIM modelling and the inspection and calibration off the surveying apparatus on a timely and duly manner. Therefore, we will avoid further delays due to topographical issues on site, de-risking the surveying differences it may occur.

8. Risk management

BADGER will utilise Highways England's Risk Management System, **Xactium,** in line with **V2P8 2.31**, to manage data in accordance with their Risk Management Plan. This will include the use of Highways England's risk breakdown structure for the coding of risks and risk scoring matrix as detailed within the Risk Management Plan.

In addition to the above, BADGER propose the following enhanced risk management processes:

- **PETRA Audits (TQ5C1.2) led by our Project Director** (Special Accident Risk Processing Programme) are applied to works where serious accidents with considerable social impact could occur, or those where the company could suffer major losses owing to faults in the project design or execution.
- **PETRA Plan IMS audits are quarterly for the activities affected**. The **BADGER Internal Auditing Service** will check every month that the points specified within the audit are being complied with, issuing a report no later than within one week of visiting the site. This report is then forwarded by the relevant Leadership Team member and the Project Director.

Health, Safety and wellbeing Impact

BADGER will develop a robust assessment approach to examining the HS&W impact for design and construction methodology solutions. This will be based on assessing the number of hours worked for a particular activity and the measured impact of the solution on reducing these hours, therefore removing human factor errors significantly and in some instances the need for heavy plant and machinery.

8.1 Risk Structure and approach

For risk management principles, however major or minor in nature, BADGER will use the processes and stages explained in this section:

This is applicable to the key decisions relating to the 'big ticket' issues and also applied with appropriate sophistication to daily Job Hazard Risk Assessments.

Stage 1: A303 Scope compliance

Scope Requirements	BADGER Compliance Process Documents
Annex W Risk Register	- BADGER Risk Register - BADGER Early Warnings Register
Client Risk Management Policy and Strategy	- BADGER Risk Management Policy
Project Control Framework (PCF)	- BADGER Risk Management Policy
Major Project Directorate Risk and Issue Management Manual	- BADGER Risk Management Policy - BADGER Risk Register - BADGER Early Warnings Register
Client's Risk Management Framework	- BADGER Risk Register - BADGER Early Warnings Register
Additional Requirements	**BADGER Compliance Process Documents**
Contract Data Part 1 and Part 2	- BADGER Risk Management Policy
Xactium User Guide	- BADGER Risk Management Policy
Health and Safety Executive Workbook	- BADGER Risk Management Policy - BADGER Health, Safety and Wellbeing Implementation Plan
Health and Safety Executive Guidance HSG250	- BADGER Health, Safety and Wellbeing Implementation Plan - BADGER Site Management Plan
Security Policy Framework	- BADGER Security Plan

Stage 2: Identify

BADGER will use the monthly Risk, Issue Review Meetings, and Early Warning Meetings to identify new risks as well as review current risks, issues and any associated actions as discussed in **V2P8 Table 5-1 and in IPC 2.3.5**. These will be communicated to the relevant parties to be assessed and recorded as necessary.

A range of techniques for identifying uncertainties that may affect our objectives will be adopted; these include (but are not limited to):

- Tangible and intangible sources of risk
- Causes and events
- Threats and opportunities
- Vulnerabilities and capabilities
- Changes in the internal and external context
- Indications of emerging risks
- The nature and value of assets and resources
- Consequences and their impact on objectives
- Limitations of knowledge and reliability of information
- Time-related factors
- Biases, assumptions and beliefs of those involved.

Stage 3: Analyse

As per **V2P8 (IPC) 2.3.3**. BADGER will carry out quantified schedules risk analysis (QSRA) and quantified cost risk analysis (QCRA) on the first Accepted Programme to assess the confidence levels of achieving the programme. Risk analysis will consider factors such as:

- Likelihood of events and consequences
- Nature and magnitude of consequences
- Complexity and connectivity
- Time-related factors and volatility
- Effectiveness of existing controls
- Sensitivity and confidence levels

At the commencement of the project, BADGER will implement a Risk Management Register to identify all perceived project risks and corresponding mitigation proposals. Furthermore, BADGER will

incentivise the wider team including subcontractors to identify and propose mitigations to risks as early as possible.

The Project Manager will schedule Risk Workshops as appropriate, and Design Consultants will be requested to identify project risks and agree joint Risk Management strategies.

The consolidated Risk Management Register will be updated monthly for inclusion in the monthly **Period End Report** to be submitted to the *Project Manager* aligned to **V2P8 2.3.5.** BADGER will use a scoring matrix to assess the risk quantitatively an example of which is below:

Probability and Impact Matrix with Calibrated Risk Scales

Probability		Consequence Levels				
		Negligible	Marginal	Significant	High	Critical
Almost Certain	>90%	Medium	High	High	Critical	Critical
Likely	60%	Medium	High	High	High	Critical
Moderate	40%	Low	Medium	Medium	High	Critical
Unlikely	20%	Low	Low	Medium	Medium	Critical
Very Unlikely	<5%	Low	Low	Low	Medium	High
Risk Category		**Impact Description**				
Cost Impact (£1,000)		<10	10 to 50	50 to 250	250 to 1000	>1000
Schedule Impact (Weeks)		<1	1 to 2	2 to 4	4 to 12	>12
Safety		Near Miss - No Treatment	First Aid	Medical Aid	Lost Time	Permanent Disability or Fatality

Stage 4: Treat

When selecting the appropriate risk treatment BADGER will balance the potential benefits derived against costs, effort or other disadvantages by reviewing threats and opportunities and assigning ownership of the risk:

Threats		Opportunites	
Avoid	Eliminate the cause that first introduced the threat	**Enhance**	Target key areas to increase the magnitude of the impact

Mitigate	Target key areas or drivers to reduce the impact to an acceptable level	Exploit	Clarify the cause to ensure benefit is realised
Transfer	Seek to place liabiltiy on a third party	Reject	Make no chages but monito the opportunity to ensure that if in the future it becomes viable
Accept	Make no changes, manage the threat	Share	Offer to share the benefit with the third party

Stage 5: Monitor and report

The risk process and its outcomes will be monitored, documented and reported (using Xactium) in accordance with the *Client's* Risk Management Plan aligned to **V2P8 2.3.1.**

Reporting will be an integral part of the project's governance and enhance the quality of the dialogue with all stakeholders and *the Client.* Factors to consider for reporting will include but not limited to:

- Different stakeholders and their specific information needs and requirements
- Cost, frequency and timeliness of reporting
- Method of reporting
- Relevance of information to organisational objectives and decision-making.

All key risks identified throughout the project will be recorded in the **Risk Register Log** and presented monthly. The Risk Register adheres to the format of **Annex W.**

9. Planning and programme management

BADGER will provide the A303 programmes, using Primavera P6, in accordance with contract data part one and the requirements of V2P8 IPC (Clause 3) for acceptance of the *Project Manager*. Our Programme will indicate the Stage Gate Assessment Review (SGAR) dates (interim and full) on the programme as milestones. **Planning and programme management will be the ultimate responsibility of the BADGER Project Manager,** supported by the **Planning Manager.**

Stage 1: A303 Scope compliance

Scope Requirements	BADGER Compliance Process Documents
S505 Programme Requirements	▪ BADGER A303 Accepted Programme
S510 Method Statement	▪ BADGER method statements, submitted with programme
V2P8 Integrated Project Controls	BADGER A303 Accepted Programme
The *Client's* latest Planning and Scheduling Manual	
The *Client's* Work Breakdown Structure	
Planning & Scheduling Appendices Handbook	
CIP Key Milestone Definition and Coding Handbook	

Stage 2:Developing our Programme Management approach

BADGER Planners will have developed the suite of A303 programmes using **Primavera P6 19.12 software** (V2P8 3.1.1), in accordance with Contract Data part one (including the X5 Sectional Completion Dates) and the requirements stated in Volume 2 Part 8 (Integrated Project Controls) (S505.1) and (V2P8 3.2.2.).

Our process for developing the programme will be **fully inclusive of all stakeholders and supply chain** and adopt the following tools and techniques to form the most efficient, logic linked programmes:

- Work Breakdown Structure (WBS)
- Planning & Scheduling Appendices Handbook 6
- CIP Key Milestone Definition and Coding Handbook 7
- Scheduling Manual 5

Last Planner – monthly collaborative planning workshops – these will be undertaken to ensure stakeholders are engaged in ongoing programme management, these sessions will include the *Project Manager.* This approach will bring all relevant parties to work together and serve to review a rolling schedule against milestones at given within the Accepted Programme.

The Programme has been developed up to a Level 3 to be able to show a robust Level 2 Programme **(V2P8 – Table 3.1)**. The Acumen Fuse ® tool has been used for project analysis and schedule optimisation to ensure a solid, reliable Tender Programme achieving a minimum score of 90%. Sectional **Time Risk Allowance** (TRA) is displayed on the Tender Programme and will be applied to BADGER activities at the end of the programme, analysing the allocated risk to each section.
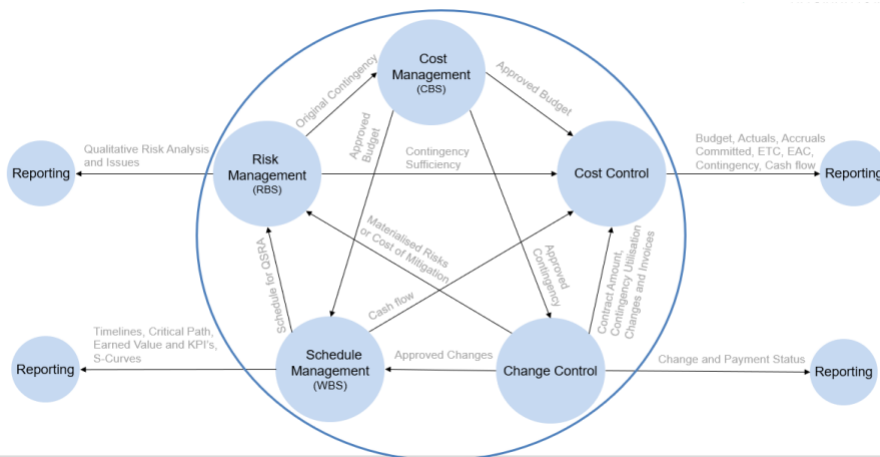
Stage 3: Integrating with the Project Controls Plan

Programme Management

BADGER's **Project Controls Manager** will prepare the **Integrated Project Controls Plan (IPCP)** within twelve (12) weeks of the starting date for acceptance by the Project Manager **(V2P8 2.1.1.)** This will provide governance to the BADGER Team for the delivery of the project controls requirement of the Contract.

Project controls are core to our business. The maintenance of BADGER's project controls systems to meet the requirements of Highways England will be defined within this Project Execution Plan (PEP). The final PEP, completed after contract award, will clearly set out the functional integration of estimating, cost control, planning, earned value (EV) assessment, risk management and financial and schedule progress reporting.

BADGER's Planning Manager will further detail and develop the Tender Programme, following the same requirements, into the **Contractor's Accepted Programme** for submission within twelve (12) weeks of the **Notice to Proceed**. 28 days after the Notice to Proceed, we will submit the Mobilisation Phase Programme (Contract Data Part I)

BADGER will prepare and submit to the *Project Manager* for acceptance a programme which meets the definition of the NEC4 Contractor's Accepted Programme at no less than monthly intervals **(V2P8 3.1.7),** with underpinning summary Design, Procurement, Fabrication, Construction & Handover Programmes **(V2P8 3.2.7).**

BADGER will ensure the Sectional completion dates are met through the establishment of a fully integrated and balanced **Performance Management Baseline** (PMB) with the full engagement of our design, construction and supply chain teams. The PMB will be established to comply with the requirements of V2P8-Integrated Project Controls, structured and coded in accordance with HE WBS and handbook. Provision will be made within the PMB for the entire scope of services of Contract, with inclusions and appropriate timescales **(V2P8 3.3.1.)** We will use

Synchro Field (Mobile Construction Management Environment) for capturing real-time data and managing project from construction site. This will enable us to work with actual data for the preparation of the Weekly Work Plan. **(V2P8 3.2.15)**

Stage 4: Managing the impact of change

Integration and management of compensation events into the programme for acceptance

Compensation Events (CEs) will impact the programme once they have been instructed by the *Project Manager*. The CEs will be assessed in the order they are notified and evaluated against the accepted programme. BADGER will be proactive in identifying threats to delivery of the programme and raise Early Warnings under the Contract at the earliest opportunity. We will collaborate at risk reduction meetings to ensure all appropriate mitigation measures are explored.

The process for dealing with change will be documented within the PEP and aligned to the NEC4 protocols by our Commercial Manager. We will use CEMAR for change management and administration. The monthly programme sessions between BADGER and the *Project Manager*, before our monthly update submission, will provide a forum where progress and the impact of change are subject to joint review and agreement before formal submission.

Protecting the Project Benefits

A key part of any change request will be to examine the **impact of the proposed change on the project benefits.** For example, each change process such as design risk assessment, compensation event, method statement will evaluate the impact to any of the A303 project benefits to ensure we stay true to the objectives and requirements of the scheme. This approach will be written into all review procedures.

Schedule/phasing conflicts

We will use the Accepted Programme to identify and resolve schedule problems, measure the impact of compensation events and delays, assist in earned value calculations and develop recovery plans. Programmes will be developed by the Planning Manager using **Critical Path Methodology** (CPM) / network analysis techniques to produce a coherent programme that covers the entirety of the works. **(V2P8 3.2.10)**

BADGER'S IMS will streamline the progress update process, thereby ensuring that the teams remain focused on forward planning and trend analysis, rather than retrospective recording of data. The unique ID coding of the activities and reporting will be stepped down to our supply chain to further streamline the monthly Accepted Programme update and improve reliability and accuracy.

Stage 5: Proposals for a programme recovery process

Mitigation measures will be introduced to prevent slippage and a recovery plan will be agreed to ensure key dates are met. A joint collaborative review with the *Project Manager*, supply chain and, where appropriate, key stakeholders will be convened to discuss options for risk mitigation. Mitigation measures could include increasing resource, increasing hours, or implementing more efficient work practices. Where appropriate, additional monitoring may be introduced, including productivity studies and daily commodity planning. BADGER will support and monitor the supply chain in implementing these strategies.

Stage 6: Programme Monitoring and Reporting

Monthly Planning Sessions will be held with the Project Manager to review the progress of the works against the milestones **(V2P8 3.1.4.), taking duly care with the Critical Path and Near-Critical Path activities (V2P8 3.1.5) and sound-logic**. We will perform activity-based clash detection during construction **(4D Synchro Pro),** that directly connects with Primavera P6 activities' Schedule, as needed and before the commencement of each sequence of work that is recognised as a change in site condition **(QS14B)**.

When updating the Programme, we will use **Acumen Fuse®** to control and monitor its robustness.

BADGER will report **Earned Value Management (EVM)** performance **(S830.1)**. Physical percentage complete will be based on production metrics, such as units and volumes, obtained from the quantity surveyors and our own topographical surveyor managers (e.g. earthworks progress quantities). Activity rate of progress (% complete) will align with the activity forecast completion dates (unless agreed otherwise) and be assessed also against the cost plans to provide a time-profiled budgeted cost that is aligned with the **PMB**. The systems will transfer data and integrate through a direct correlated mapping between the WBS in Primavera P6 and the Cost Breakdown Structure (CBS).

As progress data is entered into P6, as part of the monthly update, progress achieved will be transferred to our cost capture system automatically and be used to calculate the EV at package or cost account level. The aggregate Time Risk Allowance (including free float and terminal float) will be also monitored and reported, including the usage done up to the monthly update.

10.0 Innovation, Research and Development (R&D)

BADGER will implement a comprehensive programme of innovation/improvement initiatives, measure their impact and report these to the *Client* as required by Annex E Continual improvement and as may be requested by the *Project Manager* **S2805.1.** All innovations explored will be funded from within the BADGER R&D budget and **at no additional cost to the client.**

Stage 1: A303 Scope Compliance

Scope Requirements	BADGER Compliance Process Documents
Annex E Continual Improvement and LEAN Method	
Annex E Lean Maturity Assessment Toolkit (LMAT)	▪ BADGER Continual Improvement Plan
Annex E Simplified Lean Capability Assessment (SLCA)	▪ BADGER A303 Training Plan
Highways England Lean Maturity Assessment	
A303 Performance Manual	▪ BADGER Performance Management Policy

Stage 2: Innovation Proposals

BADGER will submit a proposal for the development of an innovation to the *Project Manager*. This will:

- Describe the innovation and its linkage to the subject matter of the contract
- State when the innovation is to be deployed and if appropriate removed from the working areas
- Indicate the desired outcome and the outputs to be produced by the contractor

Before submitting the draft proposal and if requested by the *Project Manager*, BADGER will attend a meeting to discuss the developing proposal or potential products.

Stage 3 Innovation Process

BADGER will embrace innovation and technology to continually improve the way we deliver the A303 to enhance **safety, cost, programme and quality**. We use innovation and technology to shape the future through smart construction, digital design and thorough development initiatives and opportunities to equip the next generation. Our process for identifying and creating innovations will integrate in line with **V2P1 Annex E** as follows:

Assess: We will select an innovation to focus on based on planned and targeted benefits, which have the potential to deliver best value or largest impact to our client/customers, ensuring they are safe, practical and achievable.

Develop: Through the use of collaborative planning, LEAN Six Sigma tools, ECI, Supply chain incentivisation, Working/Focus Groups and Investment in Research and Development.

Test: All innovation and lean principles will be tested through set project trials or 3D/VR scenarios. We will implement a Pilot Study to trial the innovation and test safety, effectiveness, cost and value. We will establish a comprehensive measurement plan, developed and driven by our **LEAN Champion**, responsible for measuring performance in line with **V2P1 Annex E**

Improve: We will identify opportunities for wider implementation that can be carried forward to future projects, with updates to processes and procedures to drive continual improvement.

Implement / update BADGER best practice: A new product or way of working will become our new best practice and shared with staff via emails, intranet, the A303 BIP App and through staff training detailed in the **A303 Training Programme** (QS18C). All innovations will be stored on a central database, accessible to the entire BADGER integrated project delivery team as part of our collaborative working practices.

Stage 4 Integration of Innovation, R&D into our programme

BADGER will develop a Continual Improvement Plan using as a foundation the documents outlined in Stage 1. As well as detailing some of the innovations BADGER are already researching, it will detail the processes and systems we will establish to develop innovations throughout the scheme. As examples this will include:

- **Innovation Days:** These will be planned into our A303 Training Programme Calendar. The format will be shared during our onboarding and immersion programme with specific outputs

jointly decided by team leaders. Highways England will be invited to contribute to these days

- **Supply Chain Innovation Days:** this will act as a two-way process, an opportunity for the supply chain to learn about some of the innovations in use or potentially in use on the scheme and the chance for the supply chain to share ideas and practices
- **Industry best practice / new ideas:** BADGER will look to share at national/ international industry events the innovations we undertake on the A303 Scheme. We will draw from our A303 Knowledge Hub and our A303 Best Practice Hubs **(QS-16A & QS-18C)**
- **Lessons Learned:** This is one of the most important areas of continuous improvement and R&D that in our experience is not captured at source. BADGER will use our A303 BIP App to share lessons amongst our team. Where the learning is more significant we will contribute to Raising the Bar Campaigns to share our learning across the industry.
- **Use of Learning Bursts:** for internal educational processes within our skills and learning networks. These are short video and interactive educational pieces to allow upskilling of internal and external team members.
- **Staff suggestion boxes:** New ideas and development can come from any level and often those at the work front are forgotten as a source of new knowledge. In order to capture this our A303 BIP App will include a tab for staff suggestions for improvements that can be made.
- **5G Connected Site:** which uses new and emerging technologies to deliver health and safety, customer, environmental, and productivity benefits. Led by the Digital Lead. **(TQ5C4.1)**

Stage 5 Ensuring relevance of innovation

In order to ensure our proposals are relevant to the A303 Scheme we will always ensure there is a direct link between our innovation proposal and the scheme specific performance measures (SSPMS). Some examples are provided below:

Proposed Innovation	SSPMS
Power Quality: new systems and technologies for monitoring the electrical performance of construction sites, developed for the energy efficiency sites and to reduce CO²	SSPM 1: Safety SSPM 4: Maintenance, Safety, Customer Service, Delivering the RIS
Innovative materials and optimised production processes: development of on-site production processes optimised for concrete and asphalts to reduce environmental impacts	SSPM 1: Safety SSPM 4: Maintenance, Safety, Customer Service, Delivering the RIS
Pre-Cast Segment Plan: design, engineering and testing of innovative anthropomorphic robotic systems for the integrated handling and installation of pre-cast segments in tunnels	SSPM1: Safety SSPM2: Customer Service
Digital Innovation: incorporating our global digital skills to improve efficiency, safety and quality measures in the use of BIM. For example, including assigning power supplies whenever mechanical dampers are installed, automatic testing for fire alarm systems etc. all of which aid accuracy in costing and workflow improvements. We also use BIM visual management to create holographic walk-throughs of the scheme, showing both the end result and the current construction status	SSPM 1: Safety SSPM 4: Maintenance, Safety, Customer Service, Delivering the RIS
Use of virtual reality: to identify site constraints and key interfaces. This is also used for inductions, training (operational and maintenance teams) and HS& W awareness	SSPM 1: Safety SSPM 4: Maintenance, Safety, Customer Service, Delivering the RIS
PWDRON: a system for the automated monitoring of linear civil-works	SSPM 1: Safety

infrastructure, based on the sue of high-technology drones, developed by one of our JV partners funded by the Centre for the Development of Industrial Technology.	SSPM 4: Maintenance, Safety, Customer Service, Delivering the RIS
A303 BIP App: Delivering, HSW moments and can provide instant updates to all site staff and teams.	SSPM 1: Safety SSPM 4: Maintenance, Safety, Customer Service, Delivering the RIS

Stage 6 Reporting of Innovation Outcomes

BADGER will review and report on performance on a monthly basis as a minimum. These meetings will include all key employees, including representatives from our production teams and supply chain, to achieve maximum efficiencies.